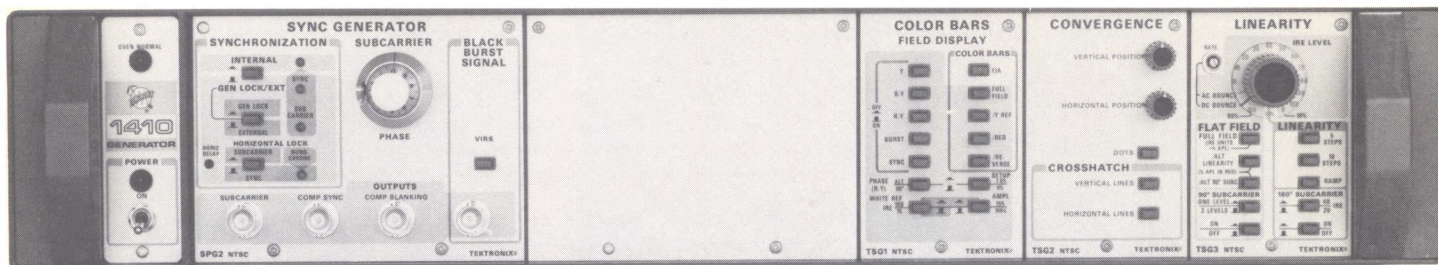


NEW 1410 SERIES

NTSC GENERATORS

All the advantages of modularity at prices usually associated with single-piece construction.



The 1410 Mainframe with a typical complement of modules: the SPG2 (left) and the TSG1, TSG2, TSG3. A two-wide blank panel 333-2162-00 covers the spaces reserved for additional test signal modules.

Plug-In Card Construction

Select just the functions you need now.
Add functions as you need them.
Economy

Sync Pulse Functions

Choice of Three Sync Generator Modules

Choice of Four Test Signal Generator Modules

The 1410 Series of NTSC Sync Pulse and Test Signal Generators offers all the advantages of modularity at prices generally associated with units of single-piece construction. To suit your specific needs, you may choose from a wide selection of sync pulse and test signal generator functions to be combined in the mainframe providing the color standard of your choice. Should you develop additional test signal requirements in the future, our plug-in card construction insures a quick and easy retrofit for you. Any combination of five test signal generators driven by one sync pulse generator is feasible.

THE MAINFRAME

The 1410 Mainframe unit includes the power supply, an extender board, an interface board, and the color-standard circuitry. Two color-standard circuits are available. The standard 1410 Mainframe generates chrominance subcarrier accurate to within 10-Hz of nominal color subcarrier frequency. The 1410 Option 1 Mainframe generates a very stable chrominance subcarrier accurate to within 1-Hz of nominal. Each color standard has a proportional control oven for the quartz crystal and the entire oscillator circuit. A front-panel lamp indicates proper operation of the oven.

1410 Characteristics

1410 Subcarrier Frequency (Fsc)—3.579545 MHz ± 10 Hz. Option 1: 3.579545 MHz ± 1 Hz.

1410 Pull-In Range—Fsc ± 100 Hz. Option 1: Fsc ± 20 Hz.

Subcarrier Input Requirements—Amplitude: 1.0 V to 4.0 V p-p. Frequency: 3.579545 MHz ± 10 Hz.

Subcarrier Return Loss— ≥ -46 dB to 3.579545 MHz.

Mechanical Specifications—Length: 19.2 in; 48.77 cm. Width: 19.0 in; 48.26 cm. Height: 3.47 in; 8.81 cm.

Mains Voltage Ranges—90-112 Vac, 106-132 Vac, 180-224 Vac, and 212-250 Vac. Factory set at 106-132 Vac.

Crest Factor—At least 1.35.

Max Power Consumption—130 W.

Max Amps at 120 Vac, 60 Hz—1.2 A.

Mains Frequency—50-60 Hz.

Comp Blanking—Line blanking duration: 11.12 μ s nominal, adjustable 9 to 12 μ s.

THE MODULES

The Sync Pulse Modules and the Test Signal Modules plug vertically onto the 1410 Mainframe interface board. Front-panel controls and switches are mounted on the module with easily removable extenders projecting through the front panels.

Available modules include three sync-pulse

generators, a color bars generator, a convergence pattern generator, a linearity signal generator, and a VIRS/Black burst generator.

SYNC PULSE GENERATION

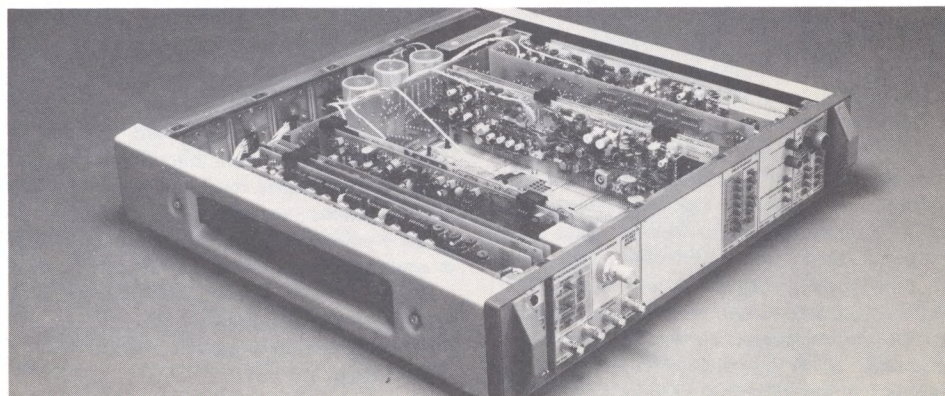
The Sync Pulse Modules SPG1 and SPG2 have three basic functions:

One—Provide sync and timing signals for use in your facility.

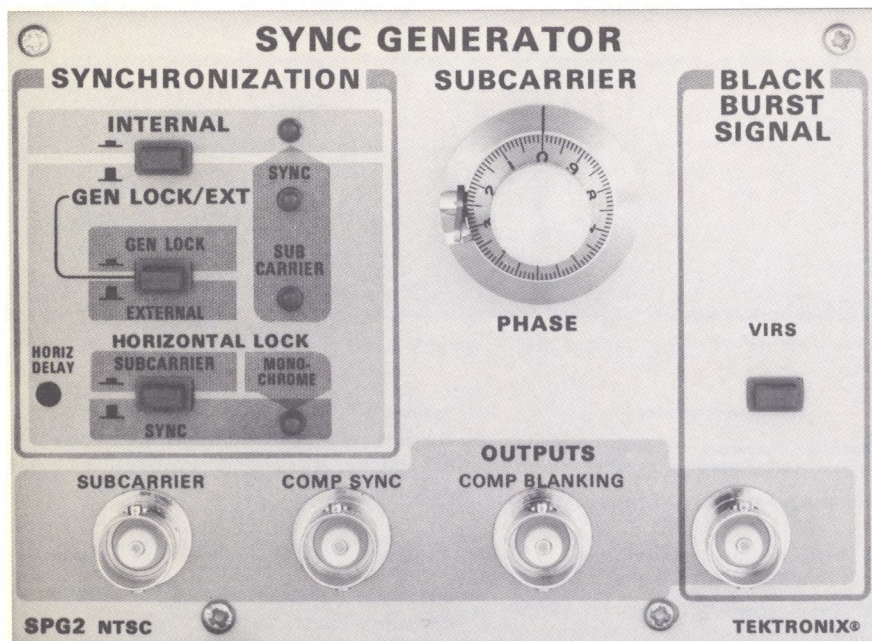
Two—Provide sync and timing for the Test Signal Modules TSG1, TSG2, TSG3, and TSG4.

Three—Provide a black burst signal with or without the vertical interval reference signal.

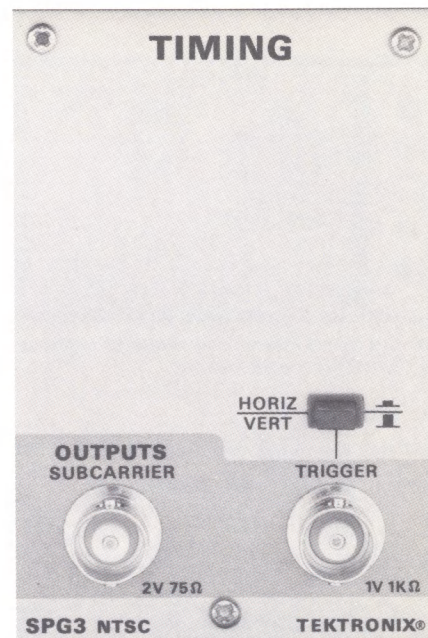
When the function of providing sync and timing for the Test Signal Modules in the 1410 Mainframe is your only requirement, the SPG3 can be used for extra economy. There are no sync and timing or black burst outputs available from the SPG3. When Black Burst and the Vertical Interval Reference Signal Outputs are desired, a TSG4 can be used with the SPG3 to provide an economical source of those signals. The SPG3 does provide subcarrier and oscilloscope triggers from front panel outputs.



The plug-in card construction of the 1410 Series is designed for retrofitting ease.



The SPG2 Sync Generator has provision for gen-lock operation. The almost identical SPG1 (not shown) does not have gen-lock capability. (Actual size)



The economical SPG3 is designed for use in 1410 Packages where test signals without sync outputs are required. (Actual size)

SPG1 AND SPG2

The SPG1 and SPG2 are identical except that the SPG2 provides color gen-lock operation. The SPG2 Generator, operated in the gen-lock mode, can synchronize the time of occurrence of field, frame, line, and subcarrier from composite video input. Color gen-lock (SPG2 only), external subcarrier, or internal subcarrier (from the 1410 Mainframe) can be selected for color standard reference. Front-panel lamps indicate loss of incoming sync and/or subcarrier due to excessive noise and/or low amplitude. Indicator lamps also indicate monochrome operation. A slow-lock mode can be selected to minimize disturbances to VTR's that are often caused by switching the gen-lock input between non-synchronous sources. The slow-lock selector is located on the generator plug-in module. Should incoming reference signals be interrupted, the user can elect to cause loss of sync to inhibit all test signals and loss of subcarrier to inhibit the subcarrier portion of all signals. The front-panel LED indicator may be lit or extinguished for loss indication at the user's discretion. With loss of the incoming sync signal, the SPG2 switches to either internal sync reference or to full-internal timing (internal jumper selectable). If horizontal lock selection is in the sync mode, full internal timing is always selected when sync is lost. Loss of sub-

carrier or incoming burst switches the SPG2 to either full-internal gen-lock or to sync lock (internal jumper selectable). Internal adjustments permit some variation of burst flag and comp blanking pulse output widths. These adjustments are preset to conform to FCC standards. Blanking width adjustments permit users to reduce widths initially to allow for the widening that sometimes occurs when the video signal is processed. A feature of interest to the VTR users is the ability of both SPG1 and SPG2 to maintain precise subcarrier to sync phasing automatically. This is a must for tape editing and program assembly.

BLACK BURST AND VERTICAL INTERVAL REFERENCE SIGNAL

The SPG1 and SPG2 provide a black burst output independent of all other outputs. The Vertical Interval Reference Signal (VIRS) is factory programmed on line 19 field 1 and 2 of black burst when turned on by a front panel switch. The VIR Signal may be easily reprogrammed to line 18 of fields 1 and 2. If black burst and the VIRS is needed when using the SPG3 the user may add a TSG4 Test Signal Generator module. The SPG1 and SPG2 can be reprogrammed to provide a full-field VIRS in place of black burst.

Characteristics SPG1, SPG2, SPG3

GEN LOCK (SPG2 ONLY)

Input Configuration—75 Ω loop-through with return loss ≥ -46 dB to 5 MHz.

Input Requirements—1 V nominal composite video or black burst, sync negative. Sync amplitude: 286 mV ± 6 dB. Burst amplitude: 286 mV ± 12 dB. Burst sync ratio: within 6 dB.

Subcarrier Phase Error with Frequency Change—Within 0.5° with input burst frequency change of ± 10 Hz. Subcarrier Phase Error with Burst Amplitude Change— $\pm 1^\circ$ 210 mV to 420 mV, $\pm 3^\circ$ 75 mV to 1.2 V.

Subcarrier Phase Stability— 0.2° for burst timing errors including burst width variance (8 to 10 cycles) and breezeway variance (± 0.28 μ s). Within 0.1° or less with APL change from 10% to 90%. Within 1° with RMS white noise at 24 dB below nominal p-p picture signal (nominal) 714 mV.

Subcarrier Phase Range— 360° via front-panel goniometer.

Line Sync Delay Range—Adjustable to advance output sync at least 10 μ s or delay at least 4 μ s (internal adjustment). A front panel screwdriver adjustment provides a delay/advance range of ± 0.5 μ sec.

Stability (over ambient temperature range 0°C to 50°C)—Line lock: within 70 ns. Subcarrier lock: within 35 ns.

Jitter—Line lock: 10 ns or less. Subcarrier lock: 4 ns or less.

Field/Frame Sync—Fast lock: direct-acting in 1 field. Slow lock: 1 line/field slew.

EXTERNAL REFERENCE (SPG1 and SPG2)

Input Configuration—75 Ω loop-through with Return Loss ≥ -46 dB to 5 MHz.

NTSC GENERATORS

Subcarrier Input Requirements—Amplitude: 1.0 V to 4.0 V p-p. Frequency: 3.579545 MHz \pm 10 Hz. Return loss: \geq -46 dB to 3.579545 MHz.

Comp Sync Input Requirements—Amplitude: 2.0 V to 8.0 V p-p. Polarity: negative.

Loss of Lock—Indicated by front-panel LED indicators. Automatic switching to partial or full internal reference.

Subcarrier Stability—Output follows input.

Line Sync Delay Range—Adjustable to advance output sync at least 10 μ s or delay at least 4 μ s (internal adjustment). A front panel screwdriver adjustment provides a delay/advance range of \pm 0.5 μ sec.

Subcarrier Phase Range—360° via front-panel goniometer.

OUTPUTS (SPG1 and SPG2)

Composite Sync—Equalizing pulse duration: 2.38 μ s \pm 50 ns; sequence duration: 3 lines. Field Sync—duration 27.0 μ s \pm 200 ns; duration 3 lines; interval between field sync pulses: 4.77 μ s \pm 100 ns. Jitter: 4 ns or less. Line sync duration: 4.77 μ s \pm 100 ns. Return loss: \geq -30 dB to 5 MHz. Isolation: \geq -30 dB. Output level into 75 Ω : 4 V \pm 5%. Rise and fall time: linear ramp, 10% to 90% time 140 ns \pm 20 ns.

Comp Blanking—Line blanking duration: 11.12 μ s nominal, adjustable 9 to 12 μ s. Field blanking duration: 21 lines nominal, adjustable 16 to 21 lines. Output level into 75 Ω : 4 V \pm 5%. Rise and fall time: linear ramp, 10% to 90% time 140 ns \pm 20 ns.

Burst Flag—Delay from line sync: adjustable. Duration: 2.51 μ s \pm 50 ns (9 cycles of subcarrier, adjustable).

Line Drive—Duration: start of line blanking to end of line sync \pm 100 ns. Output level into 75 Ω : 4 V \pm 5%. Rise and fall time: linear ramp, 10% to 90% time 140 ns \pm 20 ns.

Field Drive—Duration: 9 lines. Output level into 75 Ω : 4 V \pm 5%. Rise and fall time: linear ramp, 10% to 90% time 140 ns \pm 20 ns.

Field Ref—Position: Field 1, line 11 or Field 3, line 10.

VIR Signal—Chrominance: amplitude 286 mV \pm 2.85 mV (40 IRE \pm 0.4 IRE); phase within 0.5° of burst; envelope rise time Sin² shaped, 1 μ s \pm 150 ns. Luminance: setup level 53.57 mV \pm 3.57 mV (7.5 IRE \pm 0.5 IRE); gray level 357 mV \pm 3.57 mV (50 IRE \pm 0.5 IRE); chroma pedestal 500 mV \pm 5 mV (70 IRE \pm 0.7 IRE); rise and fall time Sin² shaped, 250 ns \pm 39 ns; Output level into 75 Ω : 4 V \pm 5%. Rise and fall time: linear ramp, 10% to 90% time 140 ns \pm 20 ns.

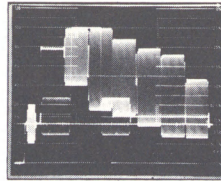
Black Burst—Amplitude: sync 286 mV \pm 3.57 mV (40 IRE \pm 0.5 IRE) negative-going; setup 53.57 mV \pm 3.57 mV (7.5 IRE \pm 0.5 IRE); burst 286 mV \pm 2.86 mV (40 IRE \pm 0.4 IRE).

Burst—H.A.D. of envelope: 2.51 μ s \pm 35 ns. Rise and fall time: 400 ns \pm 60 ns.

Breezeaway—475 ns \pm 50 ns at 10% point.

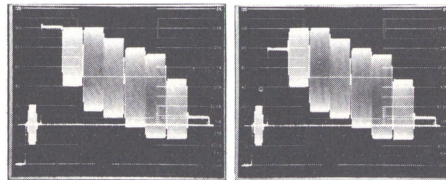
Setup—Start adjustable 9.58 μ s from leading edge of line sync, stop 1.59 μ s before next line sync leading edge.

EIA Color Bars



EIA color bars as defined by RS-189.

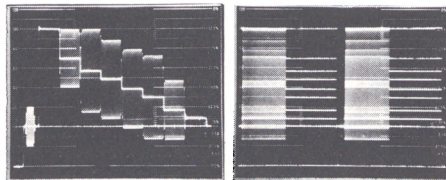
Full Field Color Bars



Left: 75% Amplitude full-field color bars with 100% white bar.

Right: 75% amplitude full-field color bars with 75% white bar.

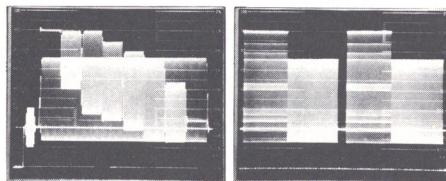
Color Bars/Y Reference



Left: Split field color bars with a luminance reference useful in gray scale tracking.

Right: Color bars/Y reference shown at field rate.

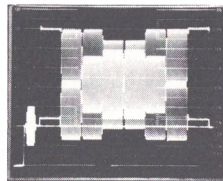
Color Bars/Red Reference



Left: Split field color bars with a red reference is a signal useful in VTR setup.

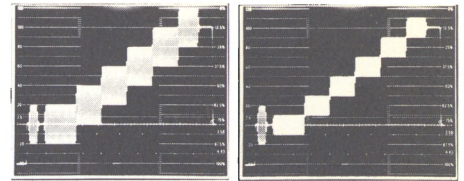
Right: Color bars/Red shown at field rate.

Reversed Color Bars



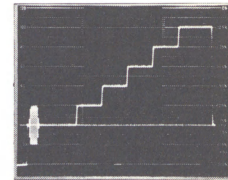
Split field color bars/color bars reversed is a signal useful for detecting chrominance to luminance delay.

5-Step Linearity Test Signal



Left: 5-Step modulated linearity test signal with 40 IRE units of subcarrier.

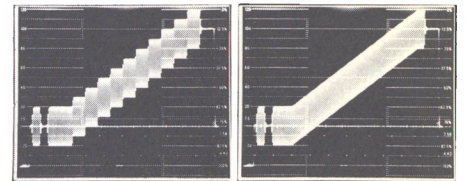
Right: 5-Step modulated linearity test signal with 20 IRE units of subcarrier.



5-Step luminance linearity test signal.

10 Step Linearity Test Signal

Modulated Ramp

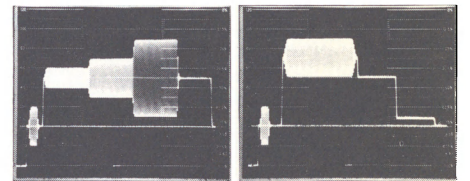


10-Step modulated linearity test signal.

Modulated Ramp linearity test signal.

Modulated Pedestal

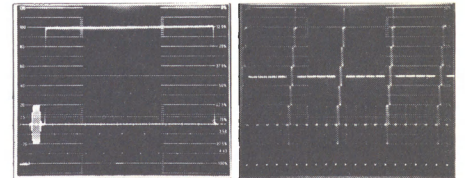
VIRS



Left: 3-Level modulated pedestal within unmodulated level, a signal used for measuring the effects of chrominance on luminance.

Right: Full field version of the VIR Signal (shown at line rate).

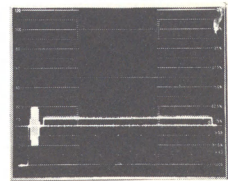
APL Testing



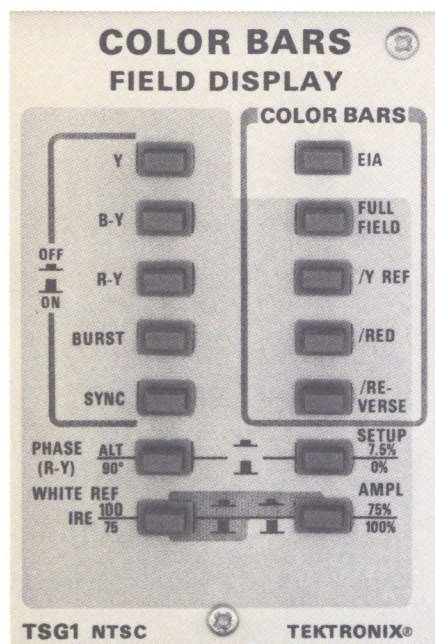
Left: The flat field test signal can be varied or bounced.

Right: The linearity Test signal alternated with flat field.

Black Burst



Black burst is available from the SPG1, SPG2, and TSG4.



The TSG1 Bars Generator (Actual size)

Five Color Bars Signals

- EIA
- Full-Field
- Split-Field with Y Reference
- Split-Field with Red Reference
- Split-Field: Bars/Bars Reversed

Test Signal Components May Be Switched Off

The TSG1 is a high quality source of full-field and split-field color bars. The TSG1 operates independently of any other Test Signal Modules installed in the 1410 Mainframe with its output available simultaneously with all other test signal module outputs. One of the sync pulse modules must be installed in the 1410 Mainframe to drive the TSG1. The composition of the module's output signal can be altered by switching off Y, B-Y, R-Y, Burst, and Sync. This feature is useful in instruction, and in research and development. Provision is made to select 0% or 7.5% set up.

The /Y REF switch selects a split field display of color bars in the same sequence as full field, followed by the luminance portion of the color bars for the remainder of the field. The split can be 1/2 or 3/4 field as selected by internal programming in the SPG1, SPG2, or SPG3. Signal provides a means for checking picture monitor gray scale tracking while simultaneously evaluating color performance.

The /RED switch selects a split-field display of color bars as in /Y REF, followed by red chrominance. (Same phase and amplitude, at the same luminance level as the red bar). This signal is useful in adjusting VTR playback controls. Head equalization errors and noise are easily spotted on a red field.

The /REVERSE switch selects a split-field display of color bars as in /Y REF, followed by color bars in a reverse sequence. (Black, blue, red, magenta, green, cyan, yellow, white). This signal helps detect chrominance to luminance delay while viewing the kinescope of a color monitor/receiver.

Both the setup level and the white reference level are front panel selectable. Setup may be set at 0% or 7.5%. White reference may be set at 100% or 75%.

CHARACTERISTICS Electrical Specifications

Luminance Signal Accuracy—Within 1% or 1.5 mV, whichever is greater.

Chrominance Accuracy—Absolute Amplitudes: within 3% (all subcarrier components). Relative Amplitudes: within 1% or 1 mV plus p-p residual subcarrier amplitude, whichever is greater, of the red chrominance bar.

Full Field Displays—Bar width: 6.45 μ s. White bar rise time: 135 ns \pm 15 ns. Time difference between chroma and lum channels: 20 ns or less.

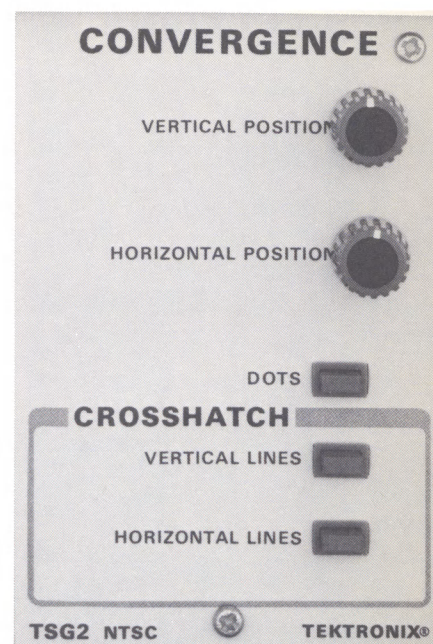
Composite Video Output—Total amplitude: 1 V into 75 Ω . Sync amplitude: $-285.7 \text{ mV} \pm 2.86 \text{ mV}$. Peak Level Amplitude: $714.3 \text{ mV} \pm 7.14 \text{ mV}$. Blanking dc level: $0 \text{ V} \pm 50 \text{ mV}$. Return loss: $\geq -30 \text{ dB}$. Isolation: $\geq -40 \text{ dB}$. Field period: 16.68 ms. Line period: 63.56 μ s. Rise and fall time—135 ns \pm 15 ns. Front porch duration—1.59 μ s \pm 50 ns at 50% point, 1.52 μ s at 10% point. Line blanking interval—11.1 μ s. Breezeway—475 ns \pm 50 ns at 10% point. Burst—Rise and fall time: 400 ns \pm 60 ns. Delay from Line Sync: 5.309 μ s (19 Cycles of subcarrier) \pm 35 ns. H.A.D. of envelope: 2.51 μ s (9 cycles of subcarrier) \pm 70 ns. Amplitude: 285.7 mV \pm 8.75 mV. Phasing on successive lines: 180°.

SPLIT FIELD DISPLAYS

Color Bars /Y-Ref—(Selected by plug-jumper on Sync Timing board in SPG.) Color bars: 1/2 or 3/4 field, selectable. Ref: 1/2 or 1/4 field, selectable.

Color Bars /Red—(Selected by plug-jumper on Sync Timing board in the SPG.) Color bars: 1/2 or 3/4 field, selectable. Red: 1/2 or 1/4 field, selectable.

Color Bars/Reverse—(Selected by plug-jumper on Sync Timing board in SPG.) Color bars: 1/2 or 3/4 field, selectable. Reverse sequence: 1/2 or 1/4 field field, selectable.



The TSG2 Convergence Generator (Actual size)

Convergence Test Signals

Dots and Crosshatch

Dots Only

Vertical Lines Only

Horizontal Lines Only

Vertical and Horizontal Lines

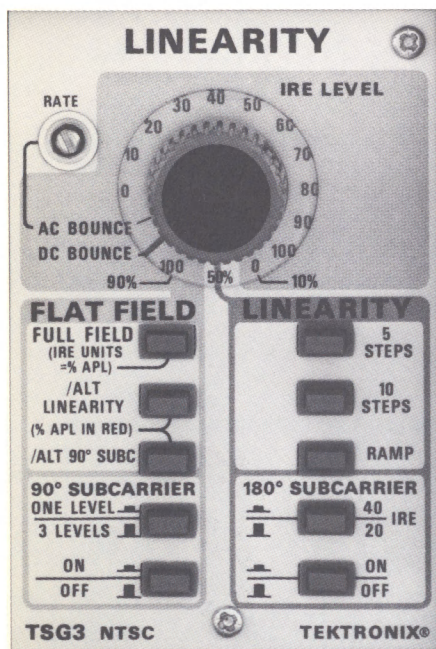
Positionable

The TSG2 is a high quality source of convergence test signals. It is useful for determining picture monitor or camera scanning linearity, aspect ratio, and geometric distortion. Signals conform to IEEE Standard 202. Provision is made for on/off switching of the dots, vertical lines, and/or horizontal lines. Vertical and horizontal line positioning is provided. The signal output is located on the rear panel of the 1410 Mainframe in which the TSG2 is installed. The convergence signal output is available simultaneously with all other test signal module outputs.

Characteristics

Displays Available—Crosshatch, vertical lines only, horizontal lines only, dots only, and crosshatch plus dots (dots appear centered in the rectangles formed by the crosshatch pattern).

Convergence Pattern—Setup: 7.5 IRE \pm 1. Sync amplitude: 40 IRE \pm 2. Peak level: 77 IRE \pm 3. Rise and fall time 135 ns \pm 15.



The TSG3 Linearity Generator (Actual size)

Staircase

5-Step

10-Step

Ramp

Modulated Pedestal

One-Level

Three-Level

Flat Field

11-Fixed Levels

AC and DC Bounce

The TSG3 is a high quality source of a variety of linearity and modulated pedestal test signals. Variable APL may be combined with either of these signals for measurement of non-linear distortions. The TSG3 operates independently of all other Test Signal Modules installed in the 1410 Mainframe with its rear panel output available simultaneously with all other test signal module outputs. One of the Sync Pulse modules must be installed in the 1410 Mainframes to drive the TSG3.

The 5-step and 10-step staircase signals and the ramp signal can be selected with, or without, 180° subcarrier modulation. The subcarrier amplitude is front panel selectable at either 20 IRE or 40 IRE. Applications include measurements of differential phase and gain, dynamic gain, luminance linearity, and burst-phase errors.

The flat field signal can be used on all active picture lines with levels set by the IRE-level control, or flat field on four lines can be alternated with one line of linearity or modulated pedestal (90° subcarrier). When using an alternate mode, APL is controlled by the IRE-level control.

The AC bounce position of the IRE level switch provides a signal in which the active portion of each line (excluding sync) changes dc levels at a rate determined by the rate control. The amplitude of the bounce excursions is fixed at 0 to 100 IRE in flat field mode and 10% to 90% APL in alternate modes.

The DC bounce position of the switch causes the entire signal, including sync, to change dc levels at a rate determined by internal adjustments. The bounce excursion is the same as in the AC bounce mode.

The modulated pedestal is a unique, Tektronix-developed, chroma-step signal that provides a means for checking luminance signal distortion caused by the subcarrier signal (chrominance-luminance intermodulation). When modulated pedestal is selected by the 90° subcarrier switch, subcarrier, phased to lead burst by 90° is added to the pedestal lines, either one-level of 5 to 20 IRE subcarrier or as three-levels of 20-, 40- and 80-IRE subcarrier can be selected.

The three-level subcarrier is used to determine the effects of subcarrier rectification upon luminance signals at all APL's through the entire TV system.

Characteristics

Luminance Component—Peak amplitude: 714 mV \pm 7.14 mV. 5 Step amplitude: 143 mV. 10 Step amplitude: 71.5 mV. Aberrations: within 2% of step amplitude. Step rise time: 250 ns \pm 39 ns between steps within 1%.

180° Subcarrier Component—Absolute amplitudes: \pm 3%. Relative amplitudes: \pm 1%. 20 IRE: 143 mV \pm 3%. 40 IRE: 285.7 mV \pm 3%.

Subcarrier Envelope—Rise time: 400 ns \pm 60 ns. Duration: 47.7 μ s. Delay from Line Sync: 9.93 μ s.

Differential Phase—0.1° or less at 10%, 50%, and 90% APL.

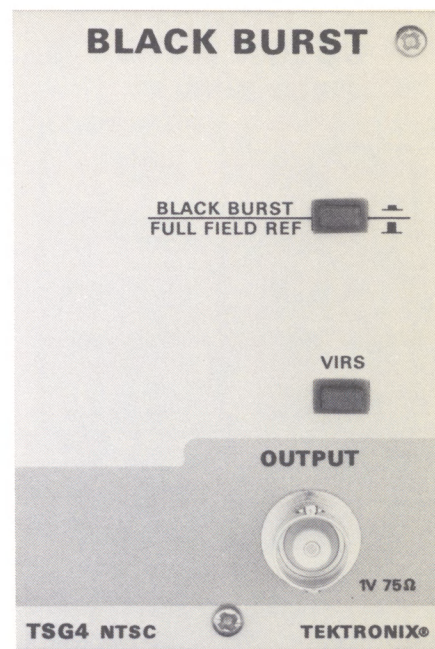
Differential Gain—0.5% or less at 10%, 50%, and 90% APL.

Modulated Pedestal
90° Subcarrier

Amplitude

One Level—5 to 20 IRE (internally adjustable)

3 Levels—20, 40, and 80 IRE.



The TSG4 (actual size) is normally used only with the SPG3.

Black Burst

Vertical Interval Reference Signal

Field Reference Signal

The TSG4 Black Burst module is designed primarily for use with the SPG3 Sync Generator, the only sync generator in the 1410 Series that does not generate black burst. The TSG4 may also be used to generate a full field Vertical Interval Reference Signal.

Because of the VIR signal's obvious simplicity, it may be much easier to use for adjustment of a VTR's playback conditions and should be considered as a possible substitute for color bars on video tape leaders.

TSG4 may be used with SPG1 and SPG2 if both Black Burst and Full Field VIRS are needed.

VIR Signal

Chrominance—Amplitude: 286 mV \pm 2.86 mV (40 IRE \pm 0.4 IRE). Phase: within 0.5° of burst. Envelope rise time: Sin² shaped, 1 μ s \pm 150 ns.

Luminance—Setup level: (7.5 IRE \pm 0.5 IRE). Gray level: (50 IRE \pm 0.5 IRE). Chroma pedestal: (70 IRE \pm 0.7 IRE).

Black Burst

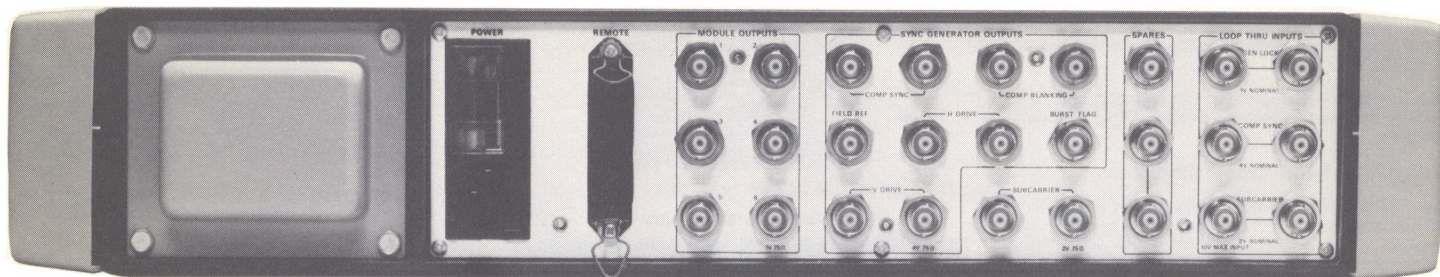
Sync Amplitude—(40 IRE \pm 0.5 IRE).

Rise and Fall Time—135 ns \pm 15 ns.

Setup Level—(7.5 IRE \pm 0.5 IRE).

Burst—(40 IRE \pm 0.4 IRE).

Burst—Rise time 400 ns \pm 60 ns.



Rear panel of the 1410

IMPORTANT ORDERING INFORMATION

The 1410 NTSC Sync Pulse and Test Signal Generator Series is designed to provide you with high quality performance, package flexibility, and economy. Our modular plug-in card construction allows you to order just the capability you require while leaving room for future expansion. To assist you in ordering your 1410 Series Generator, we recommend you follow the easy steps listed here.

1) Make your selection of the functions you need. Remember you have two mainframes, three sync pulse generators, and four test signal generators available in just about any combination you desire. Some typical packages are listed later in this section.

2) If you are ordering a 1410 Generator and one or more modules that you want delivered tested as a package, your purchase order must include "Option 88". "Option 88" is our key to assemble, calibrate, and ship your 1410 Series Generators as a single unit package.

If you already own a 1410 Generator and are adding functions to your package you need order only the module required. **Do not order Option 88 when adding modules to a 1410 Package you already own.**

For example, assume you do not own a 1410 Series Generator and you wish to order a full color sync generator with genlock. (Rackmount) Your purchase order should read:

Order: 1410R Generator Option 88
SPG2 Genlock Sync Generator
Option 88

If at a later date you needed to add a convergence signal and color bar signal, your purchase order should read:

Order: TSG1 Color Bars Generator
TSG2 Convergence Generator

3) If you are ordering more than one 1410 Generator package on the same purchase order, be sure to indicate the specific functions (modules) to be included in each package.

TYPICAL 1410 SYNC GENERATOR PACKAGES

1) Master sync generator without genlock and ± 10 Hz color standard. (Rackmount)

Order: 1410R Generator Option 88
SPG1 Sync Generator Option 88

2) Master sync generator without genlock and ± 1 Hz color standard. (Cabinet)

Order: 1410C Generator Option 1 Option 88
SPG1 Sync Generator Option 88

3) Master sync generator with genlock and ± 10 Hz color standard. (Rackmount)

Order: 1410R Generator Option 88
SPG2 Genlock Sync Generator
Option 88

4) Master sync generator with genlock and ± 1 Hz color standard. (Cabinet)

Order: 1410C Generator Option 1 Option 88
SPG2 Sync Generator Option 88

Sync generators SPG1 and SPG2 come with a black burst signal. If an SPG3 is ordered and black burst is required, order a TSG4 Black Burst Module.

POSSIBLE 1410 TEST SIGNAL GENERATOR PACKAGES

1) Master sync generator with genlock, ± 10 Hz color standard, color bars test signal, and linearity test signal. (Rackmount)

Order: 1410R Generator Option 88
SPG2 Genlock Sync Generator
Option 88
TSG1 Color Bars Generator
Option 88
TSG3 Linearity Generator
Option 88

2) Sync Generator (sync generator outputs not required), ± 10 Hz color standard, color bar test signal, and convergence pattern signal. (Cabinet)

Order: 1410C Generator Option 88
SPG3 Sync Generator Option 88
TSG1 Color Bars Generator
Option 88
TSG2 Convergence Generator
Option 88

Of course there are many 1410 Test Signal Generator packages available. Choose the combination that best suits your needs. Remember that your Tektronix Television Field Engineer is available to advise you.

ORDERING INFORMATION

1410C Generator (cabinet)
1410C Generator (cabinet) Option 1 (1 Hz)
1410R Generator (rackmount)
1410R Generator (rackmount) Option 1 (1 Hz)

SPG1 Sync Generator
SPG2 Sync Generator
SPG3 Sync Generator
TSG1 Color Bars Generator
TSG2 Convergence Generator
TSG3 Linearity Generator
TSG4 Black Burst Generator

Optional Items — 333-2162-00 Two-wide blank panel, 333-2171-00 One-wide blank panel.

Option 88 (test together as a package). This option line should be used with each item whenever you want your group of 1410 Series Generators delivered assembled and tested as a package.